

GENEX Assistant Training Slides

www.huawei.com

Copyright © 2016 Huawei Technologies Co., Ltd. All rights reserved.





Contents

1. Introduction to the Assistant

2. Operation Procedure and Function Introduction

2.1 Project Configuration, Engineering Parameter Management

2.2 Data Import, and Analysis Group Creation

2.3 KPI and IE Query, and Event Drilldown

2.4 Neighboring Cell Management,

2.5 Single-Sector Coverage Display for LTE , and Area Connection

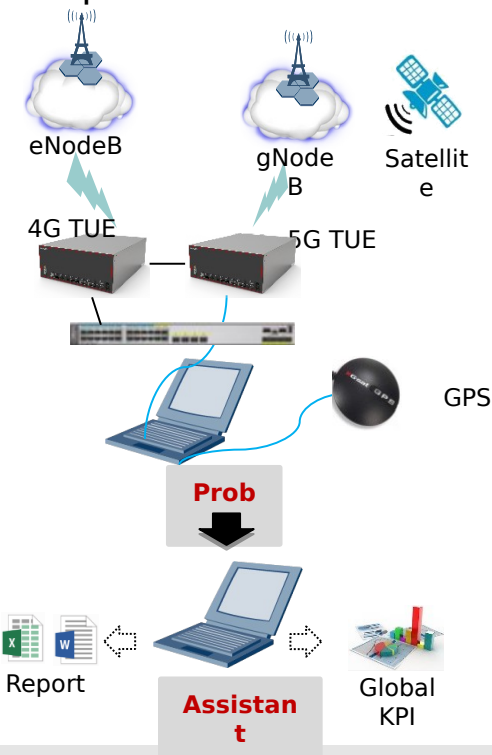
2.6 TAB File Export

Product Introduction

- As the postprocessing software for DT (air interface test) data, the Assistant helps engineers efficiently and accurately analyze DT data, learn network performance based on the data, locate problems, and generate results.

Product characteristics:

- The Assistant supports analysis of GSM\UMTS\ LTE and NR
- The data can be used: overshoot coverage, overlapping coverage and weak coverage, azimuth swapped, serving&neighboring cell analysis, and missing configurations of neighboring
- Multiple data processing mechanisms are provided, including Binning, data query based on search criteria, and data combination.
- Powerful and direct data display capabilities are provided. Detailed data decomposition information about difficult network problems is provided, helping locate problems.





Contents

1. Introduction to the Assistant

2. Operation Procedure and Function

Introduction

2.1 Project Configuration, Engineering Parameter Management

2.2 Data Import, and Analysis Group Creation

2.3 KPI and IE Query, and Event Drilldown

2.4 Neighboring Cell Management,

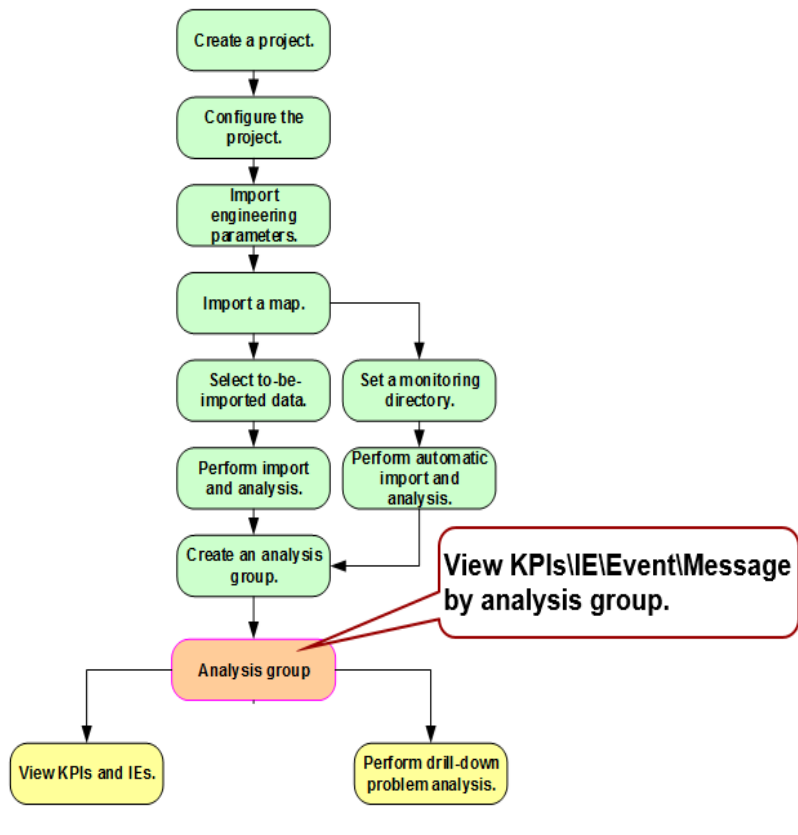
2.5 Single-Sector Coverage Display for LTE , and Area Connection

2.6 TAB File Export

Operation Procedure

Procedure

1. Install the Assistant and update the license.
2. Create a project and set the project save path.
3. Configure engineering parameters, import engineering parameters, and import a map.
4. Import DT data
5. Create an analysis group that is a combination of terminal data streams. Mobile phone data and Scanner data can be placed together.
6. Manually perform import and analysis.
7. View KPI results of an analysis group.
8. View analysis reports by analysis group.



Install the Assistant and update the license

1)download the Assistant from Huawei support website.

2)Install the Assistant and you will get the ESN

3)Apply the license and update the license.

- Login China Domain: authentication through a China domain account
- Login License Server: authentication through a server
- Offline Update: manual application in offline mode

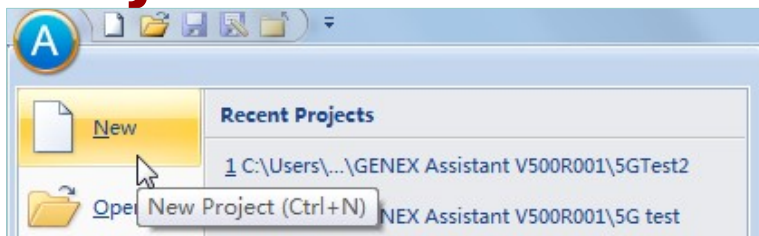
Main GUI—

The screenshot displays the GENEX Assistant - Demo software interface, which is used for analyzing network data. The interface is divided into several main sections:

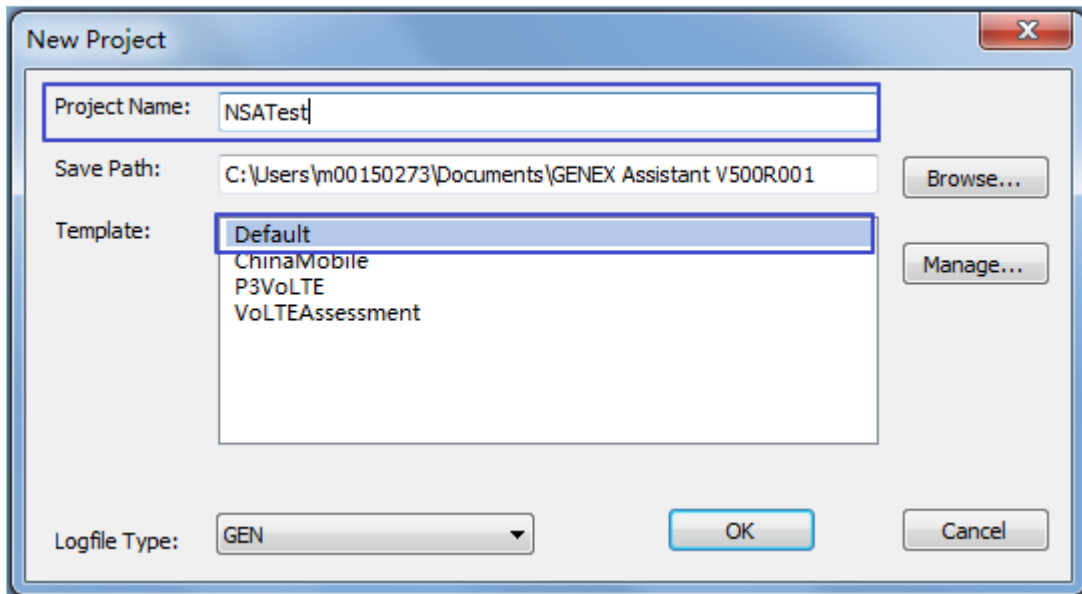
- Left Panel (Project Tree):** Contains a hierarchical view of the project structure, including 'Demo', 'Map', 'Site', 'Region', 'Logfile', 'Analysis Group', 'All Logs', 'short call', 'long call', and 'Scanner'. It also includes a 'Common IE query' section.
- Top Panel (Menu/Toolbar):** Includes a 'Project' menu, 'Analysis' tab, 'View' tab, 'Report' tab, and 'Tool' tab. A 'Replay' button is highlighted with a callout.
- Central Panel (GSM/WCDMA/LTE Chart):** Displays a multi-layered signal quality chart. Callouts indicate 'Customized (delay/KPI/query)' and 'Engineering parameter management'.
- Right Panel (L3 Message):** Shows a list of messages with columns for ID, MS, Time, D..., Chann..., and Message Name. A callout points to this area as the 'IE display area'.
- Bottom Panel (WCDMA Serving/Active Set + Neighbors):** Displays a table of cell information. A callout points to this area as the 'Global view area, such as the display of IEs and KPIs'.
- Bottom Right Panel (Map):** Shows a map view with a path highlighted. A callout points to this area as the 'Drill-down area, providing the in-depth problem locating function'.

Additional callouts include 'Area management', 'DT log management', 'Analysis group management', 'IE name filtering', 'Legend management', and 'Project management'.

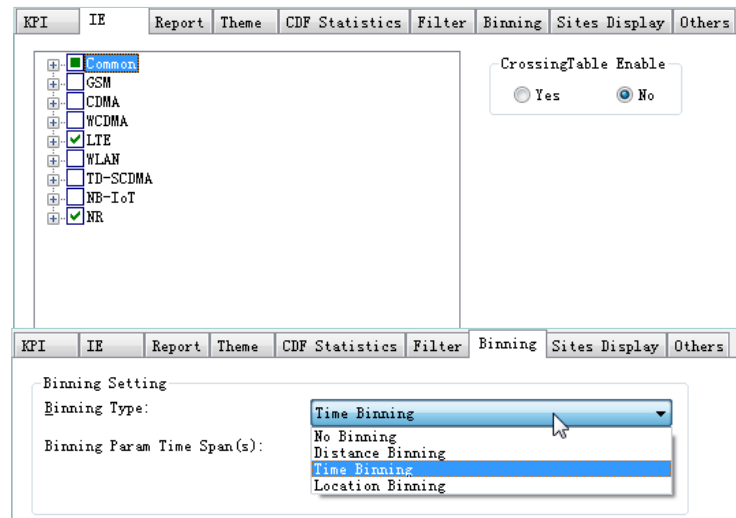
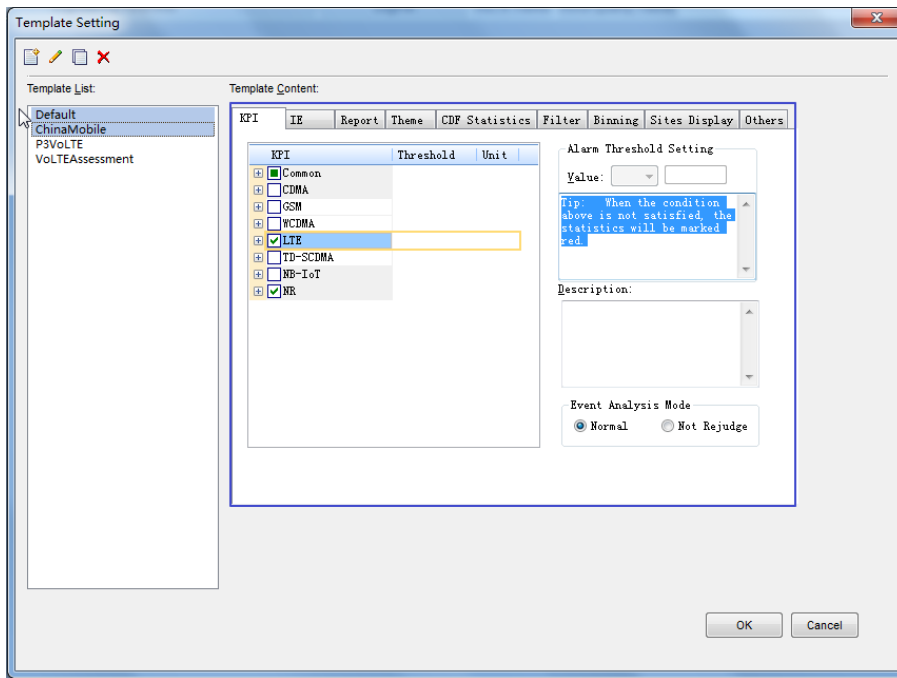
Project Creation



- Creates a project. You can manage an engineering parameter template by clicking the Manager button.
- Template : Default



Project Management Configuration



- You can select statistical items, such as KPI, IE, and Binning Type.

Project Management Configuration (Continued)

The screenshot displays the 'Template Content' window with the 'KPI' tab selected. The interface includes a list of KPIs on the left, a table for setting thresholds, and a description box on the right.

| KPI | Threshold | Unit |
|---------------|-----------|------|
| Common | | |
| CDMA | | |
| GSM | | |
| WCDMA | | |
| LTE | | |
| TD-SCDMA | | |
| NB-IoT | | |
| NR | | |
| Accessibility | | |
| ULCarrier... | | % |
| Coverage | | |
| NR To... | | s |
| Delay | | |
| SCe... | >90.00 | ms |
| SC... | | ms |
| U... | | |

Alarm Threshold Setting
Value:
Tip: When the condition above is not satisfied, statistics will be marked in red.

Description:
KPI (SCellAddSuccess Delay) = KPI (SCellAdd Total Delay) / KPI (SCellAddSuccess Counter);

Event Analysis Mode
☒ Normal ☐ Not Rejudge

Annotations:

- Alarm threshold.** The KPI values exceeding the threshold are marked in red.
- Select desired KPIs.** Unselected KPIs are not calculated. You can set a KPI threshold. The KPIs that do not meet conditions are automatically marked in red in KPI analysis results.
- Normal** indicates event rejudgement and **Not Rejudge** indicates no rejudgement, improving analysis efficiency.

- After creating a project, you can modify configuration contents of KPIs and IEs. If default configurations are used, skip this configuration page.

Project Management Configuration (Continued)

The screenshot shows a software window with a menu bar at the top containing 'KPI', 'IE', 'Report', 'Theme', 'CDF Statistics', 'Filter', 'Binning', 'Sites Display', and 'Others'. The 'Theme' tab is selected. On the left, a 'Theme List' tree shows 'Handover' and 'Coverage' checked, while 'WCDMA' and 'LTE' are expanded. The main area, titled 'Property:', contains a table with 'Property' and 'Value' columns. Under the 'Common' category, 'Extend Distance(%)' is set to '10.00'.

| Property | Value |
|--------------------|-------|
| Common | |
| Extend Distance(%) | 10.00 |

The screenshot shows a software window with the same menu bar as the previous image. The 'Filter' tab is selected. It contains two sections: 'IE filter condition' and 'Time filter condition'. The 'IE filter condition' section has a 'Logical Operator' set to 'and' and an empty table with 'Index' and 'IE Condition Item' columns. The 'Time filter condition' section has an empty table with 'Index' and 'Time Condition Item' columns. Both sections include 'Add...', 'Delete', and 'Clear' buttons. A 'Preview:' label is present below each table.

- Theme parameter setting: Set theme thresholds to affect theme result generation.
- Filtering function: Set time and IE conditions to reserve data meeting conditions.

Project Management Configuration (Continued)

The screenshot shows the 'Report' tab in the configuration window. It features a list of report templates on the left and a table of properties on the right.

| Property | Value |
|---------------------------------|-------|
| <input type="checkbox"/> Report | |
| Report composite show | Yes |
| Map legend composite show | No |
| Grid show | Yes |
| Indoor min PCI | 360 |
| Indoor max PCI | 478 |
| RSRP Difference Value | 5 |

Grid show
The grid will be shown on the map picture if the value is yes.

- Report: sets the report generation conditions, such as whether the legend is displayed. The purpose is to speed up report generation.
- CDF Statistics: sets the CDF percentage, which is displayed on the **Statistic** sheet.

The screenshot shows the 'CDF Statistics' tab. It contains a 'CDF Setting' section with a text input field for 'CDF (%)'.

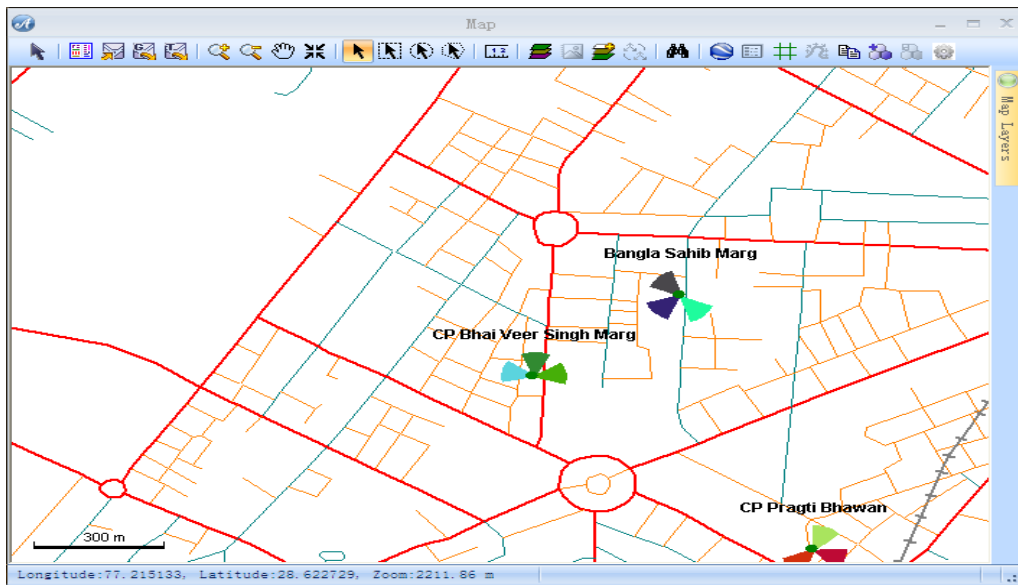
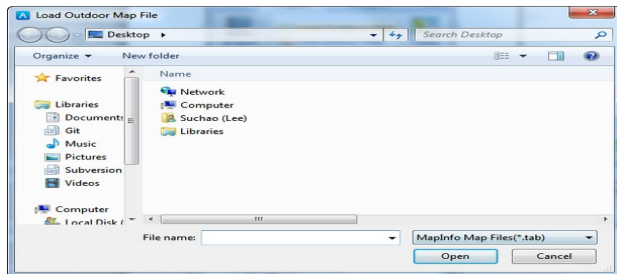
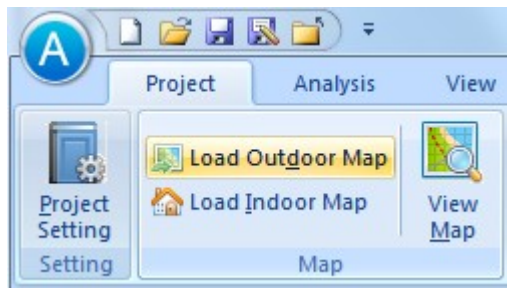
CDF Setting

CDF (%):

The screenshot shows a table titled 'RSCP for 1st Best in Active Set-All Logs-On Sheet'. The table has two columns: 'Element' and 'RSCP for 1st Best in Active Set_All Logs'. The 'CDF 5%' row is highlighted with a red rectangle.

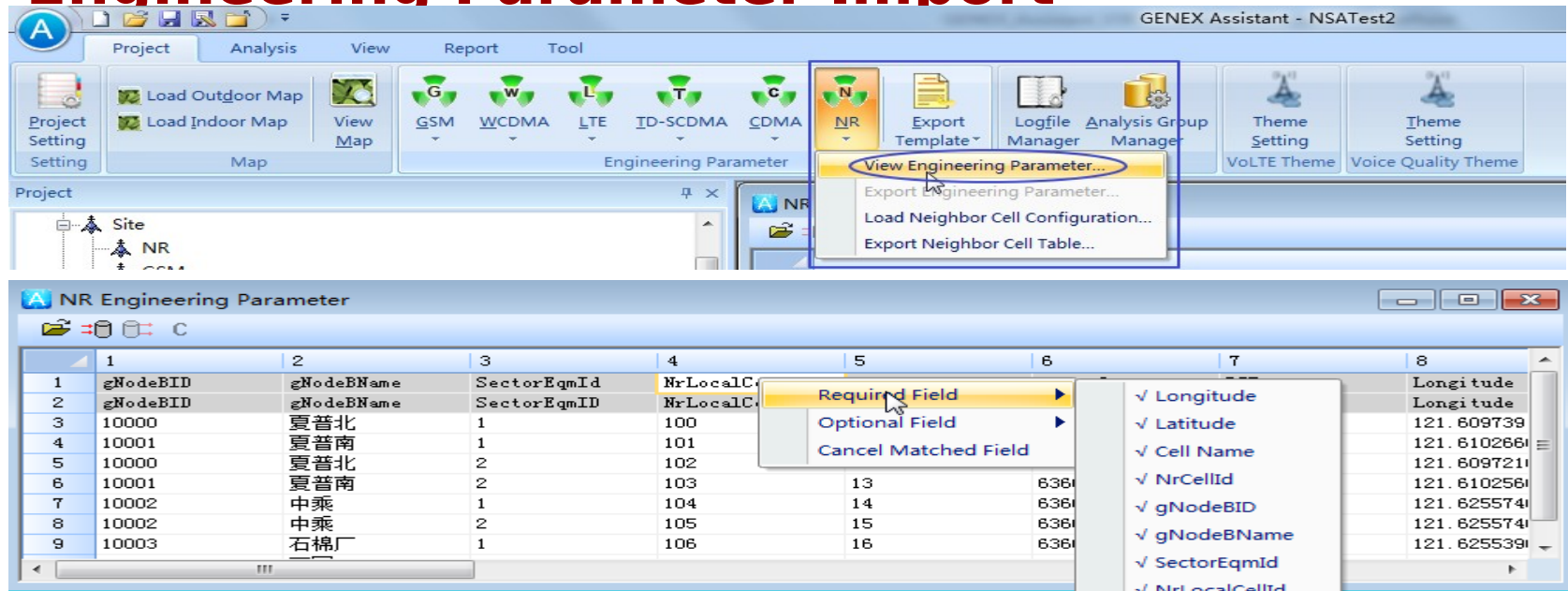
| Element | RSCP for 1st Best in Active Set_All Logs |
|--------------------|--|
| Average | -84.58 |
| CDF 5% | -80.37 |
| Maximum | -35.73 |
| Minimum | -124.99 |
| Standard Deviation | 14.09 |
| [-130,-115] | 546(0.78%) |
| [-115,-105] | 3031(4.32%) |
| [-105,-95] | 11283(16.09%) |
| [-95,-85] | 25362(36.16%) |
| [-85,-75] | 13482(19.22%) |
| [-75,-65] | 8375(11.94%) |
| [-65,0] | 8051(11.48%) |
| Sum Total | 70130 |

Indoor and Outdoor Map Import



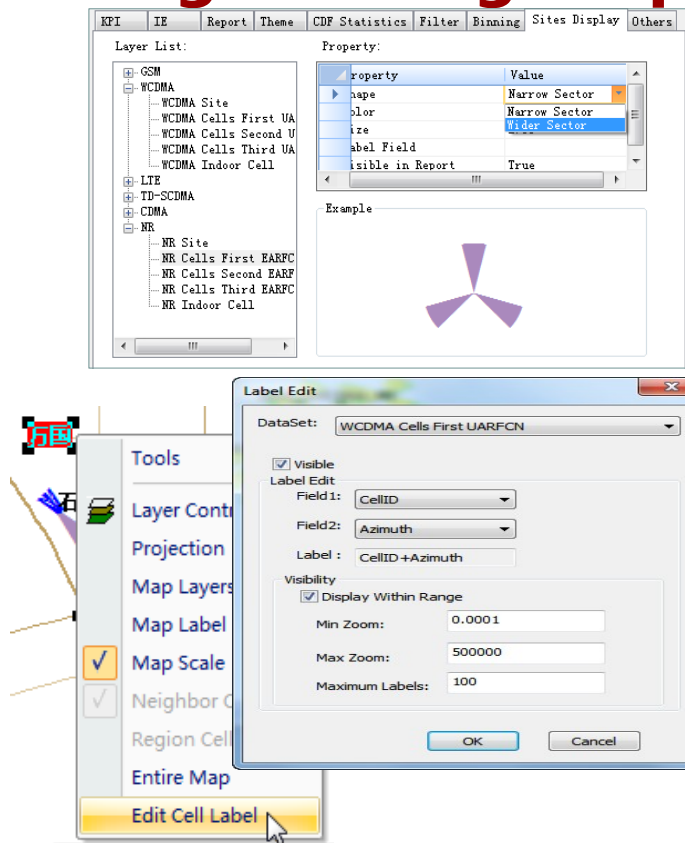
- Outdoor maps support import of electronic maps in MapInfo, BMP, JPG, and GIF formats.
- Indoor maps support BMP, JPG, GIF, PNG, and TIF formats.

Engineering Parameter Import



- Procedure for importing engineering parameters:
 - Choose **Site** > NR in the project tree.
 - Choose **View Engineering Parameter** and click the import icon in the LTE **Engineering Parameter** window to import engineering parameters.
- In the NSA network, import the LTE engineering parameters in the same time.

Engineering Map Display Control

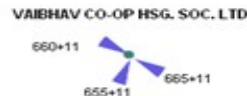


➤ Display setting method 1:

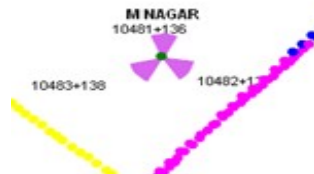
Portal: Project Setting->Sites Display

Setting items: You can set the shape and size of a base station or cell, displayed character, whether to display cell information in a report.

Impact scope: all map pages for the entire project.



SiteName, BCCH, and BSIC display effect for GSM



NodeBName, CellID, and PSC display effect for WCDMA



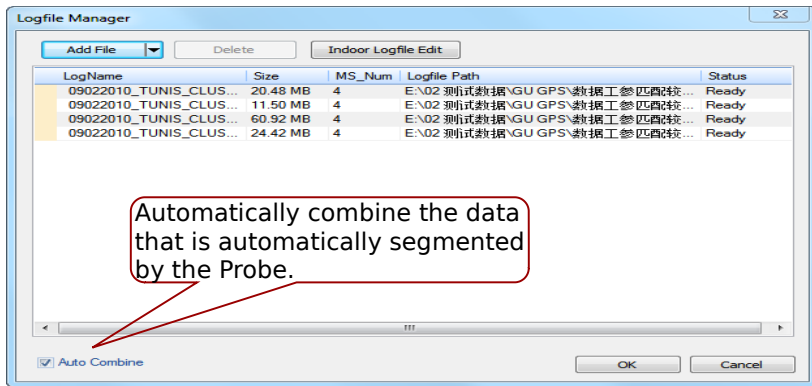
eNodeBName, CellID, and PCI display effect for LTE

➤ Display setting method 2:

Portal: Click **Edit Cell Label** on an engineering parameter map layer to set the label.

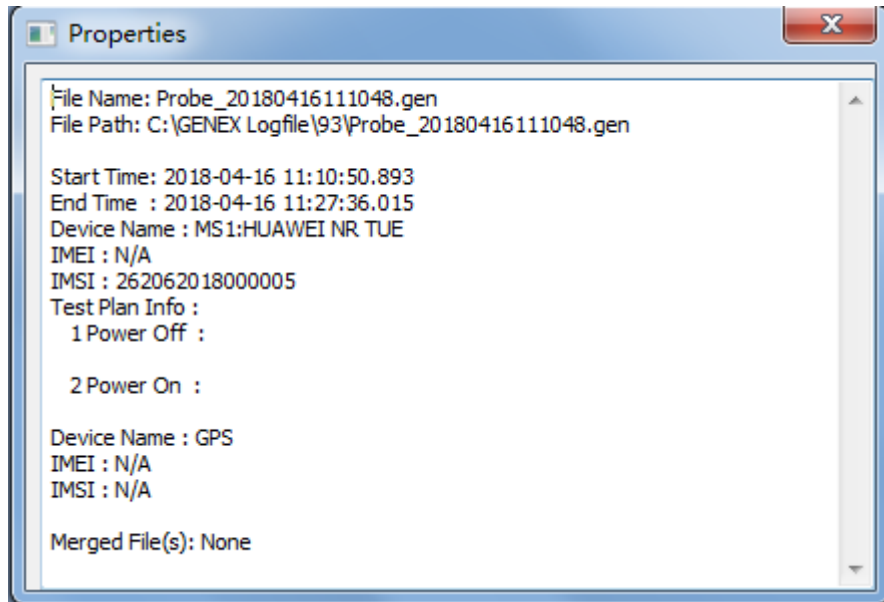
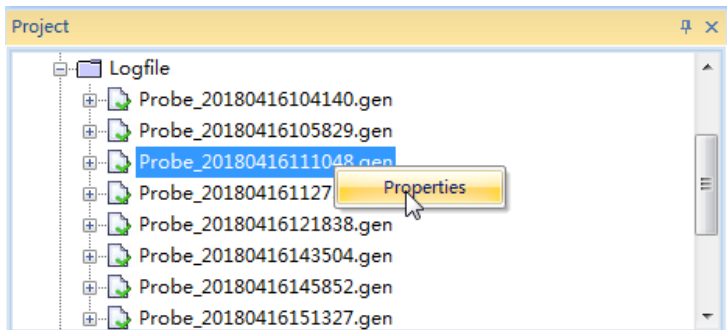
Impact scope: current map page

Data Import



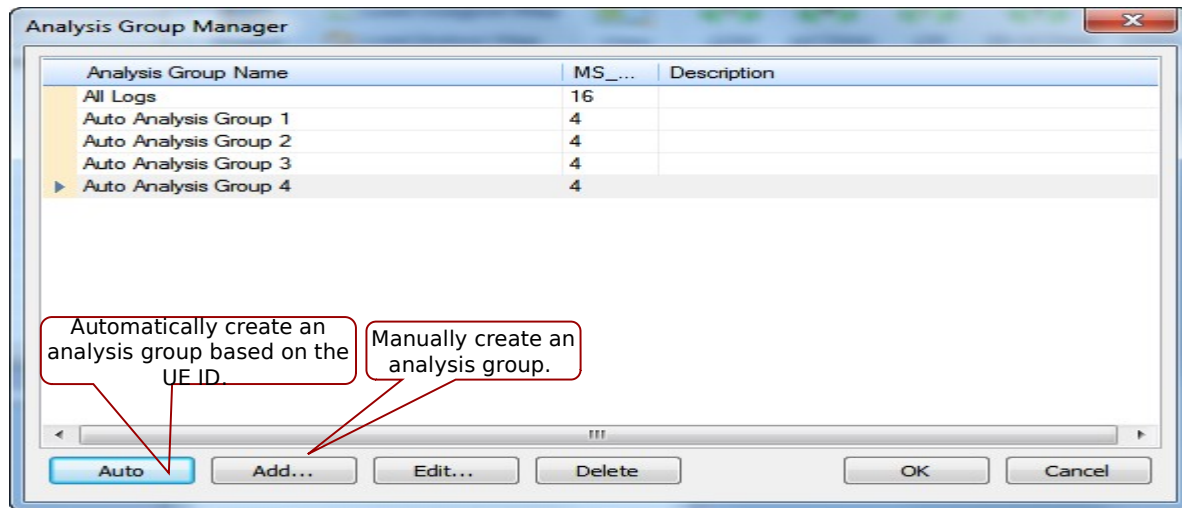
- Import and analysis procedure:
 - Step 1: Select data in the Logfile Manager.
 - Step 2: Create an analysis group. For details about how to create an analysis group, see the next page.
 - Step 3: Right-click **Analysis Group** and choose **Run Analysis** from the shortcut menu. Complete data parsing at a time, which takes a long time. The system quickly generates desired results based on the created analysis group (quick secondary calculation).

Test Plan Check and test information



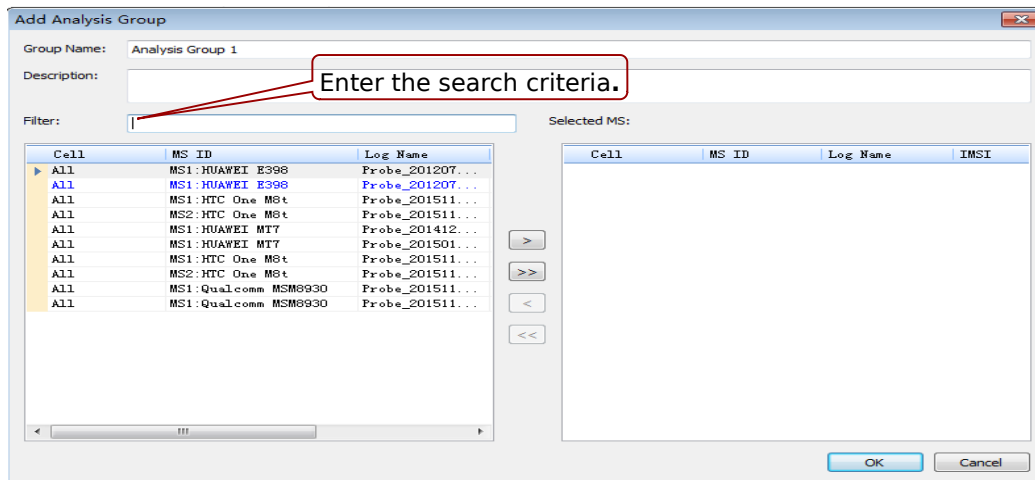
- The Assistant allows you to check test plans in detail, which helps you analyze data and create analysis groups.

Analysis Group Management



- An analysis group is a group of data. You can place different terminal data in analysis groups based on service requirements. You can create analysis groups based on the MS ID, device type, IMEI, and IMSI.
- Automatic creation of an analysis group: A UE ID corresponds to a terminal ID during a Probe test. If a test plan remains unchanged, the UE ID remains unchanged. If an analysis group is automatically created when the test plan is not changed, automatic combination is implemented based on the test plan to create the analysis group.
- Procedure: Right-click **Analysis Group** in the project tree and choose **Analysis Group Manager** from the shortcut menu. Create an analysis group in the displayed analysis group management window.

Analysis Group Creation



- You can create analysis groups based on different service scenarios and based on the MS ID, device type, IMSI, and IMEI. Example: 1. Collect statistics on KPIs for different services. Place data of terminals for the same service type in the same analysis group. 2. Alternatively, create analysis groups based on terminals. For example, create an analysis group for HTC One terminals and create another for the Scanner.

KPI Browsing

| KPI | | | | |
|---|--|----|----|--|
| All Logs | | 93 | 98 | |
| Common | | | | |
| Accessibility | | | | |
| Coverage | | | | |
| Delay | | | | |
| Retainability | | | | |
| Service integrity | | | | |
| CDMA | | | | |
| GSM | | | | |
| WCDMA | | | | |
| LTE | | | | |
| TD-SCDMA | | | | |
| NB-IoT | | | | |
| NR | | | | |
| Accessibility | | | | |
| ULCarrierUpdateUpdateSuc Rate (%) | | | | |
| Delay | | | | |
| SCellAddSuccess Delay (ms) | | | | |
| SCellModSuccess Delay (ms) | | | | |
| ULCarrierUpdateUpdateSuc Delay | | | | |
| Retainability | | | | |
| SCGFailure Counter | | | | |
| Secondary Cell Connection Success Rate (%) | | | | |
| Secondary Cell Connection Update Success Rat... | | | | |

Statistics on general KPI results are collected based on analysis groups.

- The Assistant provides the unified KPI browsing function. You can uniformly view KPIs of multiple analysis groups. In addition, the Assistant classifies various KPIs.
- Double-click the result value of a KPI to display the calculation formula, and numerator and denominator of the KPI.
- In addition, a list of events of a type in the analysis group can be automatically displayed based on the KPI type for you to quickly view the time point when events fail and related log file information.

| KPI Calculate Expression | | |
|--|---------------------------|-----------------|
| KPI(SCellAddSuccess Delay) = KPI(SCellAdd Total Delay)/KPI(SCellAddSuccess Counter); | | |
| Name | Time | Event Name |
| SCellAddSuccess Counter | 1 2018-04-16 10:44:54.885 | NRSCellAddAt... |
| SCellAdd Total Delay(ms) | 2 2018-04-16 10:44:55.042 | NRSCellAddSu... |
| | 3 2018-04-16 10:44:57.997 | NRSCellAddAt... |
| | 4 2018-04-16 10:44:58.156 | NRSCellAddSu... |
| | 5 2018-04-16 10:54:10.531 | NRSCellAddAt... |
| | 6 2018-04-16 10:58:57.147 | NRSCellAddAt... |
| | 7 2018-04-16 10:58:57.306 | NRSCellAddSu... |
| | 8 2018-04-16 11:01:55.687 | NRSCellAddAt... |

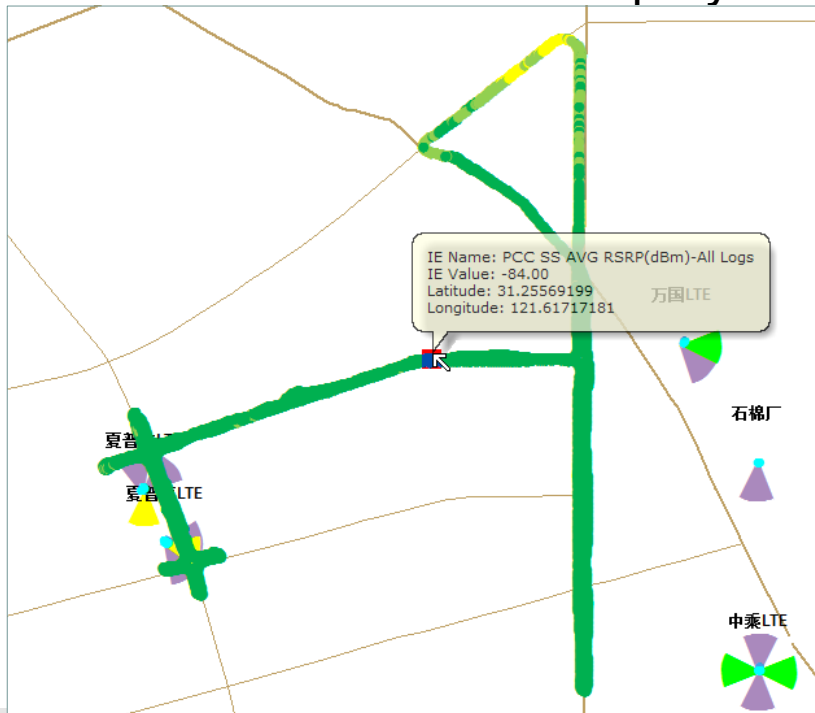
Double-click a KPI to view correlation factor values.

Double-click a KPI to view correlated events in detail. Double-click an event for drilldown analysis. For details, see the drilldown view.

Drilldown View and Method(1)

Drilldown method:

Double-click a sheet or map on the **Overview** sheet. The drilldown window is displayed.

A dialog box titled 'IE Drill Down' with a close button (X) in the top right corner. It contains three input fields: 'Before IE(s)' with the value '50', 'After IE(s)' with the value '60', and a dropdown menu for 'NR'. Below these fields are three buttons: 'Export', 'OK', and 'Cancel'. Arrows point from the text 'Set the IE number before and after the click point.' to the 'Before IE(s)' and 'After IE(s)' fields, and from 'Select the technology' to the 'NR' dropdown menu.

Set the IE number before and after the click point.

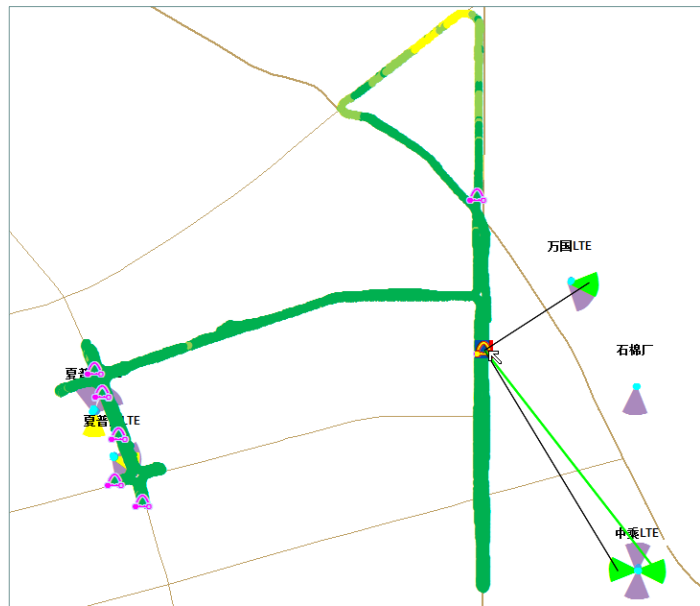
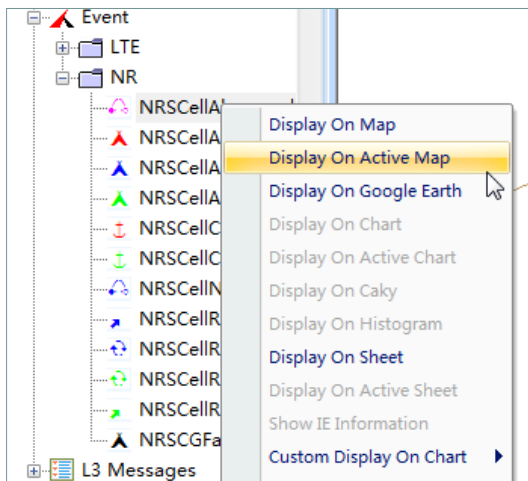
Select the technology

Drilldown View and Method(2)

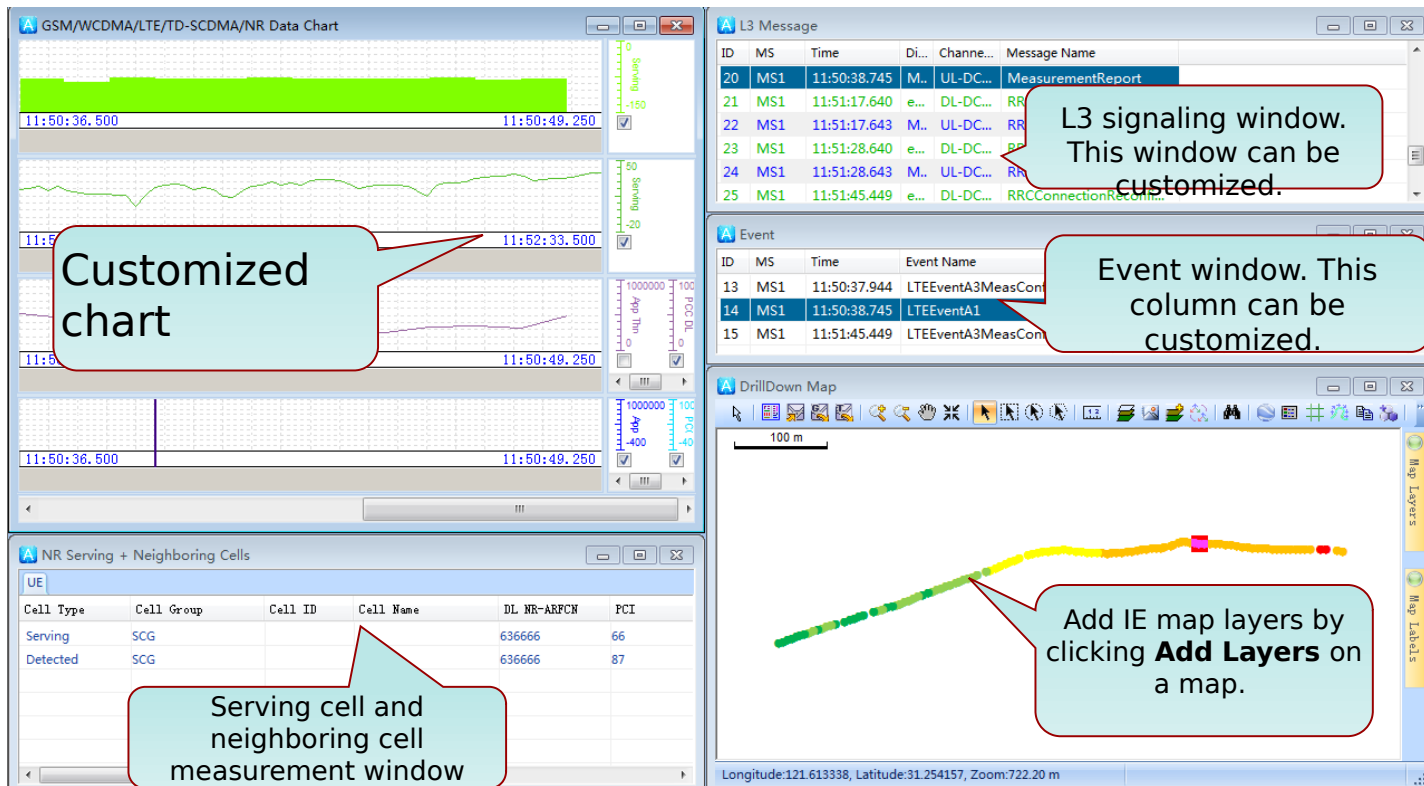
- **Drilldown view:**

Overview is automatically switched to Drill Down which can display L3 signaling, SIP signaling, event, active set, and Map windows. The windows are associated with each other for detailed problem analysis.

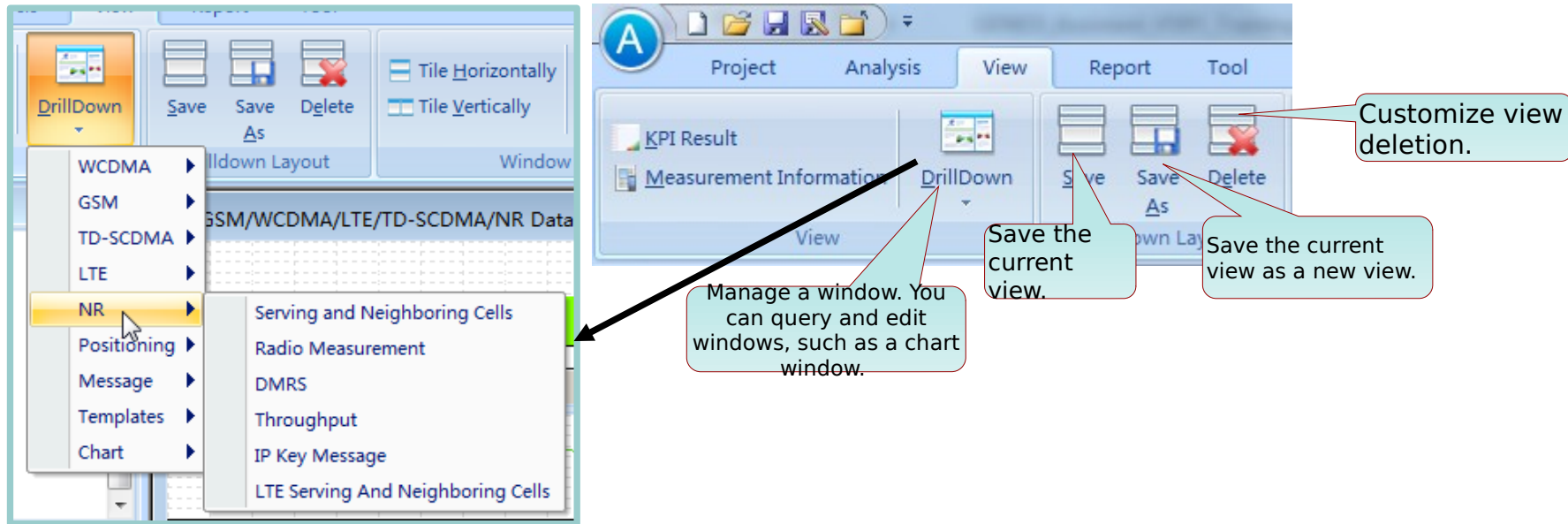
Show the event on the map and double click to drill down



Drilldown View and Method(2)

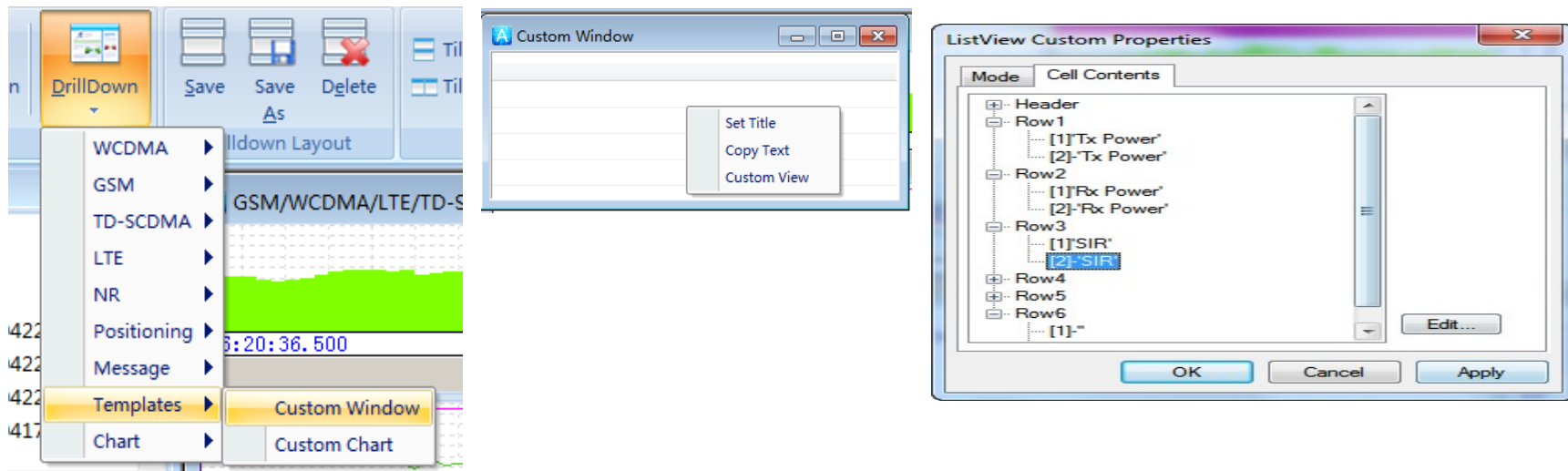


Drilldown View Management Function



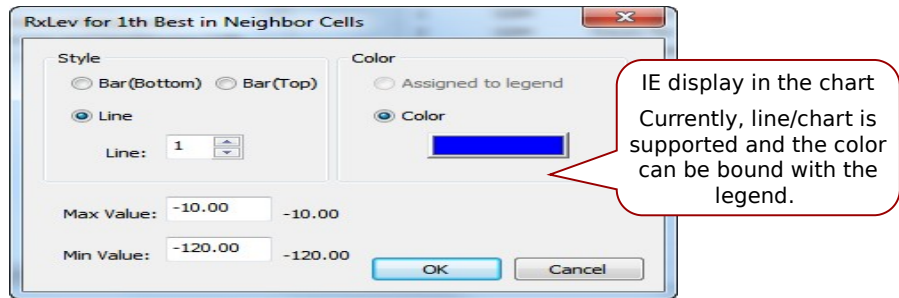
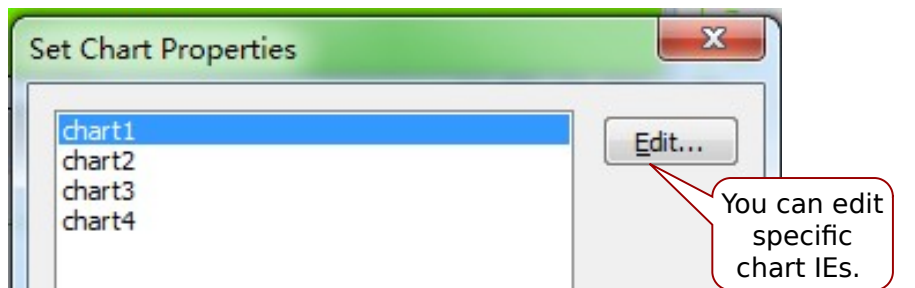
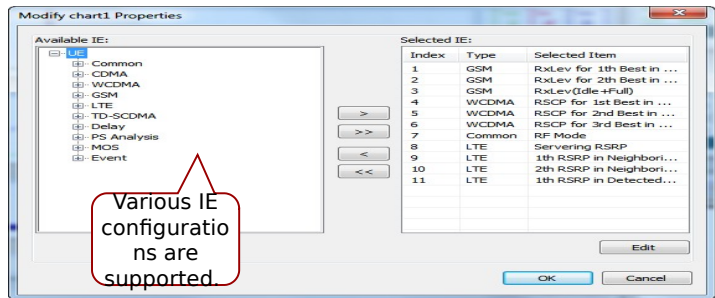
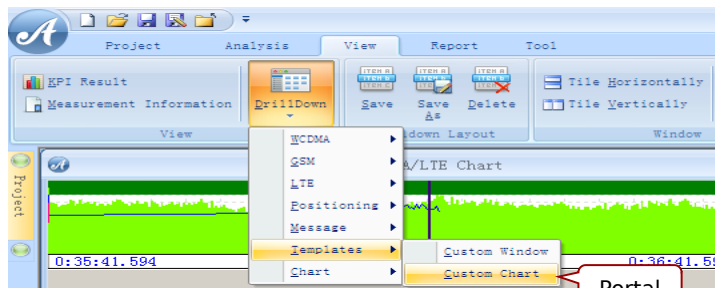
- The Assistant provides the drilldown view layout management function, including adding, modifying, and deleting a view. The view layout can be customized based on user requirements.
- During drilldown, various predefined windows are provided, including **Chart/ListView/Map/Message** windows. In addition, displayed contents can be customized.

Customized List View Window Drilldown



- When the IEs cannot meet requirements during drilldown, you can add a customized drilldown window and add required IEs to the drilldown window.

Customized Chart Drilldown



- When the chart IEs cannot meet requirements during drilldown, you can add or modify a customized drilldown window and add required IEs to the drilldown window.

IE GUI Description

The screenshot displays the GENEX Assistant interface with several panels and data views:

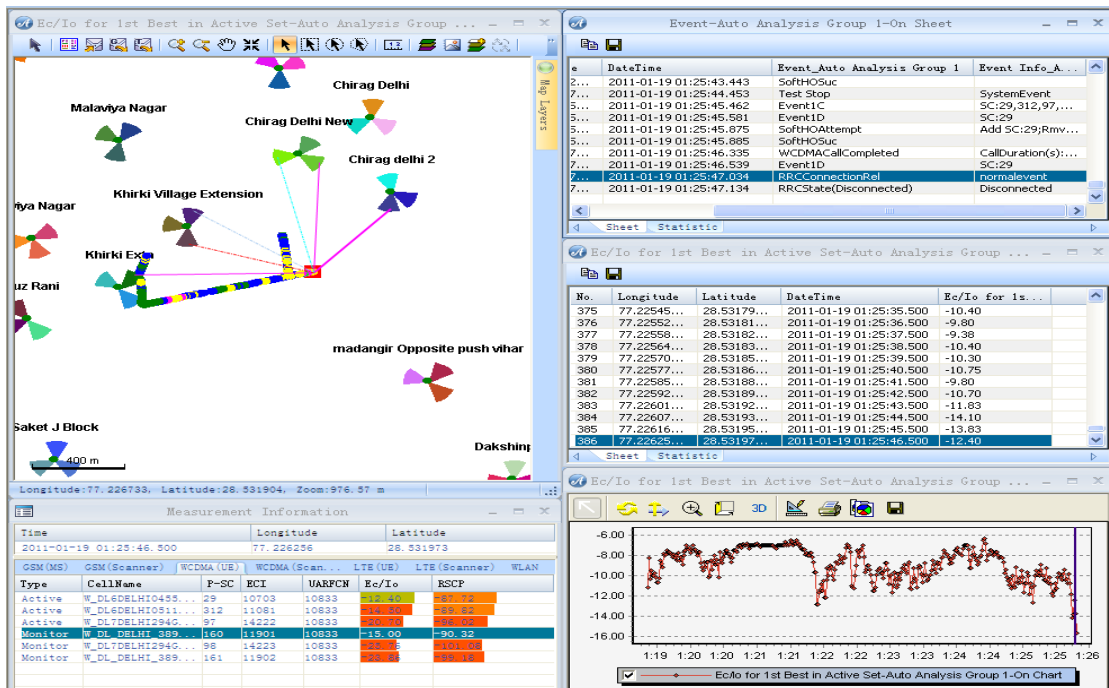
- Project Panel (Left):** Shows a tree structure for 'Auto Analysis Group 1' with sub-items like Common, Custom, WCDMA, Event, RRC, RAB, CALL, HD, System, and Other. A red box highlights the 'IE items' section.
- Map View (Center):** A map showing various locations like Malviya Nagar, Chirag Delhi, Chirag Delhi New, Chirag Delhi 2, Khirki Village Extension, Khirki Ex, Saket J Block, and Dakshin. A scale bar indicates 400m.
- Table View (Bottom Center):** A table titled 'Measurement Information' with columns: Time, Longitude, Latitude, Type, CallName, P-SC, RCI, UARFCN, Ec/Io, and RSCP. It lists various active and monitor measurements.
- Event View (Top Right):** A table titled 'Event-Auto Analysis Group 1-On Sheet' with columns: Date/Time, Event, and Event Info. It lists various events like Test Stop, SystemEvent, SCID, Add SCID, Rm, CallDuration, EverID, normalEvent, and Disconnected.
- Chart View (Bottom Right):** A line chart titled 'Ec/Io for 1st Best in Active Set-Auto Analysis Group 1-On Chart' showing a fluctuating signal over time.

Annotations:

- Analysis group switching:** After you click an analysis group, the IE tree immediately changes.
- Common IEs for GSM, UMTS, and LTE are supported.**
- IE items:** A red box highlights the 'IE items' section in the Project panel.
- IEs can be displayed using Map, Sheet, Chart, Histogram, and Google Earth.**

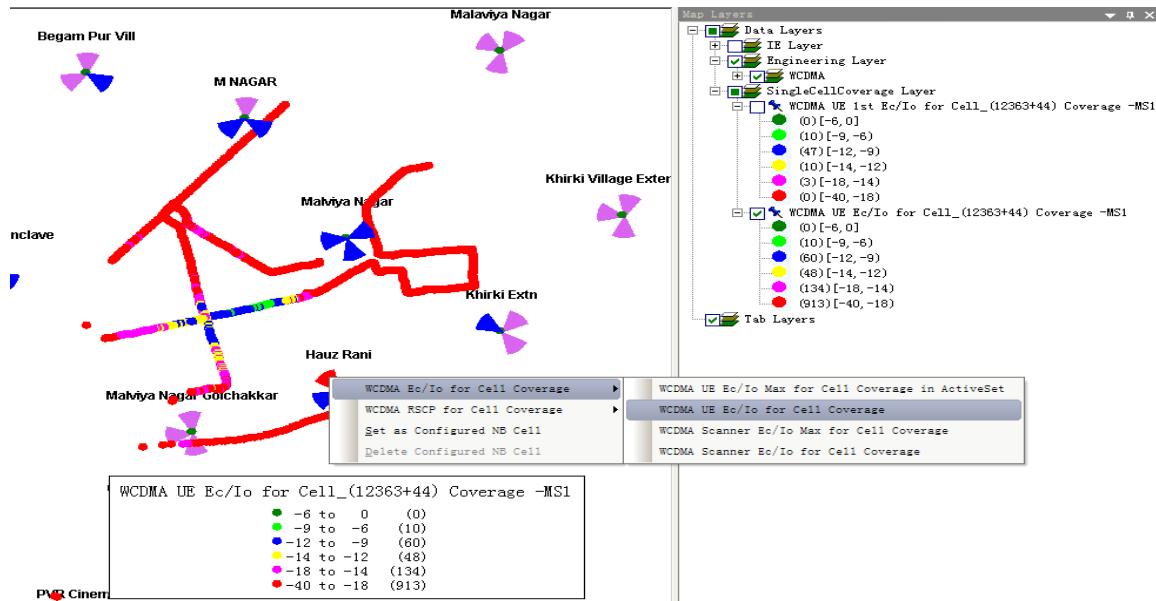
The Assistant supports various IEs and displays them in a straightforward way.

IE Display - Association



- The Assistant supports multiple association modes, helping locate problems.
 - Map, Sheet, and Chart can be associated with each other.
 - Micro information association is supported. Measurement Information can be associated with neighboring cell information measured by a UE or Scanner.
 - Cell connections are supported on a map.

LTE Single-Sector Coverage Map---NR



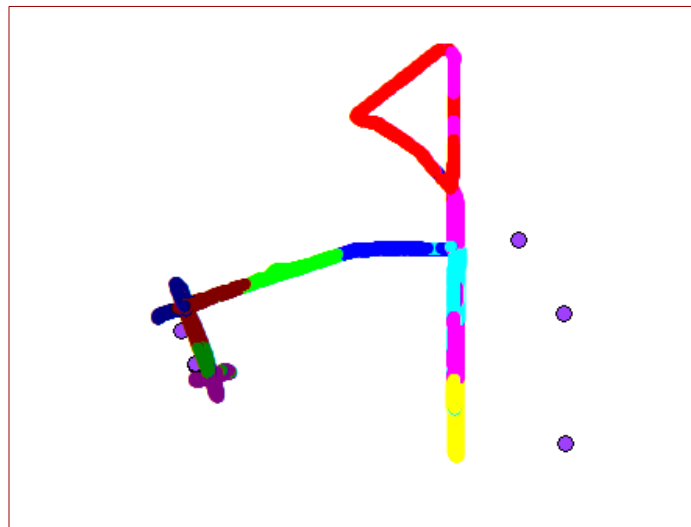
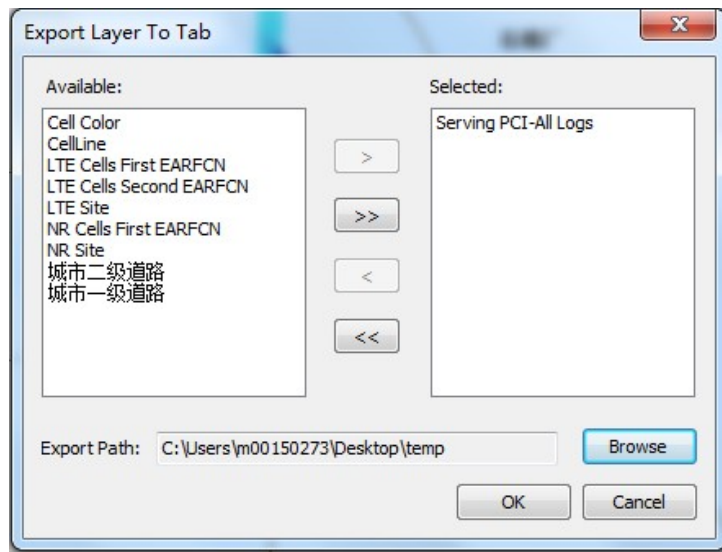
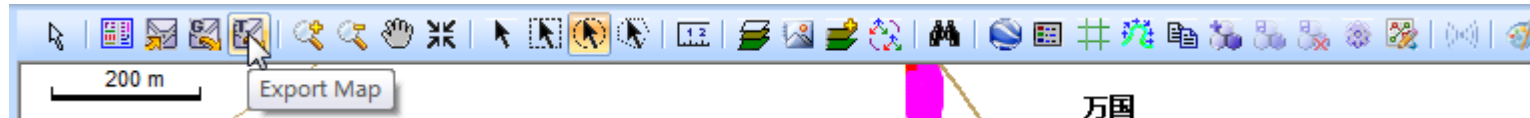
- Right-click a sector on a map and choose an item from the shortcut menu to generate a single-sector coverage map. Supported terminal types are UE and Scanner.
- Coverage maps for GSM/UMTS/LTE cells that serve as serving cells can be generated.
- Coverage maps for all measured signals in GSM/UMTS/LTE cells can be generated.

NR Area Connections



- Right-click an IE area on a map and choose **Region CellLine** from the shortcut menu to connect areas.
- During cell connections, corresponding cell rendering is implemented on the map. The rendering color is the same as the connection color.

TAB File Export



- You can export map layers on a map as TAB files for display in MapInfo.

Thank you

www.huawei.com